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THE ROLE OF VORTICITY FLUXES IN THE DYNAMICS OF THE ZAPIOLA ANTICYCLONE

The Argentine Basin in the South Atlantic Ocean is one of the most energetic regions in the ocean with complicated dynamics, which plays an important role in the global climate. A number of observations have discovered an intense anticyclonic gyre of barotropic circulation around the Zapiola Rise in the center of the basin. Theoretical studies have shown that the Zapiola Anticyclone represents an eddy-driven flow controlled by bottom friction. Recent advances in high-resolution global-ocean data syntheses, performed using NASA supercomputing facilities, provide realistic simulations of the circulation and variability in the Argentine Basin. Using these simulations and satellite altimeter observations we analyzed the vorticity balance of the Zapiola Anticyclone. Our results suggest the dominance of the planetary vorticity flux in determining the intra-seasonal and inter-annual variability of the gyre, while the relative vorticity flux also plays a role at intra-seasonal scale.

Poster presentation

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